

**WHAT IS CLAIMED IS:**

1. 1. A multi-channel video optical transmission system made to convert  
2 a multi-channel video signal into an optical signal in an optical transmitter  
3 and transmit the converted optical signal from said optical transmitter  
4 through an optical fiber to an optical receiver,  
5       said optical transmitter comprising:  
6               pilot signal generating means for generating a pilot signal to  
7 be superimposed on said multi-channel video signal inputted;  
8               frequency modulating means for modulating said pilot signal  
9 superimposed multi-channel video signal into a frequency-modulated  
10 signal in batches; and  
11              electrical-optical converting means for converting said  
12 frequency-modulated signal into an optical signal and further for putting  
13 the converted optical signal out to said optical fiber,  
14        said optical receiver comprising:  
15              optical-electrical converting means for receiving said optical  
16 signal transmitted through said optical fiber to convert the received optical  
17 signal into an electric frequency-modulated signal;  
18              amplifying means for amplifying said frequency-modulated  
19 signal obtained by said optical-electrical converting means; and  
20              frequency demodulating means for frequency-demodulating  
21 said frequency-modulated signal amplified by said amplifying means into a  
22 pilot signal superimposed multi-channel video signal,  
23        wherein said pilot signal generating means has a frequency  
24 modulation function to modulate a frequency of said pilot signal for

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25 modulating a frequency of an intermodulation distortion occurring at  
26 frequencies corresponding to the sum of and difference between a  
27 frequency of each carrier of said multi-channel video signal and a  
28 frequency of said pilot signal.

1       2.     A multi-channel video optical transmission system made to convert  
2     a multi-channel video signal into an optical signal in an optical transmitter  
3     and transmit the converted optical signal from said optical transmitter  
4     through an optical fiber to an optical receiver,

5                 said optical transmitter comprising:

6                     pilot signal generating means for generating a pilot signal to  
7     be superimposed on said multi-channel video signal inputted; and  
8                     electrical-optical converting means for converting said pilot signal  
9     superimposed multi-channel video signal into an optical signal and further  
10    for putting the converted optical signal out to said optical fiber,

11                 said optical receiver comprising:

12                     optical-electrical converting means for receiving said optical  
13     signal transmitted through said optical fiber to convert the received optical  
14     signal into an electric signal corresponding to said pilot signal  
15     superimposed multi-channel video signal; and

16                     amplifying means for amplifying said electric signal  
17     corresponding to said pilot signal superimposed multi-channel video signal  
18     obtained by said optical-electrical converting means,

19                 wherein said pilot signal generating means has a frequency  
20     modulation function to modulate a frequency of said pilot signal for

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21 modulating a frequency of an intermodulation distortion occurring at  
22 frequencies corresponding to the sum of and difference between a  
23 frequency of each carrier of said multi-channel video signal and a  
24 frequency of said pilot signal.

1       3. An optical transmitter for use in a multi-channel video optical  
2 transmission system, which converts a multi-channel video signal into an  
3 optical signal and transmits the converted optical signal through an optical  
4 fiber to an optical receiver, said optical transmitter comprising:

5              pilot signal generating means for generating a pilot signal to be  
6 superimposed on said multi-channel video signal inputted;  
7              frequency modulating means for modulating said pilot signal  
8 superimposed multi-channel video signal into a frequency-modulated  
9 signal in batches; and

10             electrical-optical converting means for converting said frequency-  
11 modulated signal into an optical signal and further for putting the  
12 converted optical signal out to said optical fiber,       wherein said pilot  
13 signal generating means has a frequency modulation function to modulate  
14 a frequency of said pilot signal for modulating a frequency of an  
15 intermodulation distortion occurring at frequencies corresponding to the  
16 sum of and difference between a frequency of each carrier of said multi-  
17 channel video signal and a frequency of said pilot signal.

1       4. An optical receiver for use in a multi-channel video  
2 transmission system, which receives a multi-channel video signal,  
3 converted into an optical signal in an optical transmitter, through an

4       optical fiber, said optical receiver comprising:  
5            optical-electrical converting means for receiving said optical  
6        signal transmitted through said optical fiber to convert the received  
7        optical signal into an electric frequency-modulated signal, with said  
8        optical signal being produced in a manner that, at the conversion in  
9        said optical transmitter, a pilot signal is superimposed on said multi-  
10      channel video signal and a frequency of said pilot signal is  
11      modulated by a frequency modulation function of said optical  
12      transmitter for modulating a frequency of an intermodulation  
13      distortion occurring at frequencies corresponding to the sum of and  
14      difference between a frequency of each carrier of said multi-channel  
15      video signal and a frequency of said pilot signal;  
16           amplifying means for amplifying said frequency-modulated  
17      signal obtained by said optical-electrical converting means; and  
18           frequency demodulating means for frequency-demodulating  
19      said frequency-modulated signal amplified by said amplifying means  
20      into a pilot signal superimposed multi-channel video signal.

1       5.     An optical transmitter for use in a multi-channel video optical  
2       transmission system, which converts a multi-channel video signal into an  
3       optical signal and transmits the converted optical signal through an optical  
4       fiber to an optical receiver, said optical transmitter comprising:  
5           pilot signal generating means for generating a pilot signal to be  
6       superimposed on said multi-channel video signal inputted; and  
7           electrical-optical converting means for converting said pilot signal

8 superimposed multi-channel video signal into an optical signal and further  
9 for putting the converted optical signal out to said optical fiber,

10 wherein said pilot signal generating means has a frequency  
11 modulation function to modulate a frequency of said pilot signal for  
12 modulating a frequency of an intermodulation distortion occurring at  
13 frequencies corresponding to the sum of and difference between a  
14 frequency of each carrier of said multi-channel video signal and a  
15 frequency of said pilot signal.

1 6. An optical receiver for use in a multi-channel video transmission  
2 system, which receives a multi-channel video signal, converted into an  
3 optical signal in an optical transmitter, through an optical fiber, said optical  
4 receiver comprising:

5 optical-electrical converting means for receiving said optical signal  
6 transmitted through said optical fiber to convert the received optical signal  
7 into an electric signal in which a pilot signal is superimposed on the multi-  
8 channel video signal, with said optical signal being produced in a manner  
9 that a frequency of said pilot signal is modulated by a frequency  
10 modulation function of said optical transmitter for modulating a frequency  
11 of an intermodulation distortion occurring at frequencies corresponding to  
12 the sum of and difference between a frequency of each carrier of said  
13 multi-channel video signal and a frequency of said pilot signal; and  
14 amplifying means for amplifying said electric signal obtained by the  
15 optical-electrical converting means.